GE
Intelligent Platforms

Industrial Computer Products

PACSystems*
RXi Box IPC

User's Manual, GFK-2785C

May 2014

Warnings, Cautions and Notes as Used in this Publication

Warning

Warning notices are used in this publication to emphasize that hazardous voltages, currents, temperatures, or other conditions that could cause personal injury exist in this equipment or may be associated with its use.

In situations where inattention could cause either personal injury or damage to equipment, a Warning notice is used.

Caution

Caution notices are used where equipment might be damaged if care is not taken.

Note: Notes merely call attention to information that is especially significant to understanding and operating the equipment.

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Additional information	http://www.ge-ip.com/
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	customercare.cn.ip@ge.com (China)

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Chapter

1

Introduction

The PACSystems RXi family of industrial computers provides an advanced, high-performance control and computing platform. The PACSystems RXi Box IPC delivers the flexibility of a PC with the industrial ruggedness of traditional automation controllers.

Built with an open and scalable architecture, the RXi platform enables easy connectivity and allows you to maximize application reusability—supporting your current and future needs for business growth.

These small form-factor industrial PCs provide a number of features to support computing applications in demanding environments.

- **Dual core 1.0 GHz VIA processor**
- **Multiple Gigabit Ethernet interfaces** provide network implementation flexibility.
- **Built-in Data Storage** – Internal disks provide highly reliable local long-term data retention**.**
- **USB and SD Card** interfaces enable program loading, serial communications and removable data storage via standard devices.

Specifications

Part numbers:

ICRXIBN7E000A	RXi Box IPC with Embedded 32GB mSATA SSD and Windows 7 Professional, SP1 or later operating system
ICRXIBN7E001A	RXi Box IPC with Embedded 32GB mSATA SSD and Windows Embedded Standard 7
ICRXIBN7M000A	RXi Box IPC with 250GB Magnetic SATA Hard Drive and Windows 7 Professional, SP1 or later operating system
ICRXIBN7M001A	RXi Box IPC with 250GB Magnetic SATA Hard Drive and Windows Embedded Standard 7
ICRXIBN0E000A	RXi Box IPC with Embedded 32GB mSATA SSD
ICRXIBN0M000A	RXi Box IPC with 250GB Magnetic SATA Hard Drive
ICRXIACCBPL	Optional Backplate for DIN rail mounting
IC690ACC001	Real Time Clock (RTC) battery, included with IPC

General Specifications

<table>
<tr><td rowspan="2">Dimensions</td><td>IPC:</td><td>191.8mm x 115.6mm x 81.3mm
(7.55 in x 4.55 in. x 3.2 in)</td></tr>
<tr><td>Backplate:</td><td>226 mm x 137 mm x 12 mm
(8.90 in. x 5.39 in. x 0.47 in.)</td></tr>
<tr><td rowspan="2">Weight:</td><td>IPC without Backplate</td><td>1.814 Kg (4 lbs)</td></tr>
<tr><td>Backplate</td><td>0.454 Kg (1 lb)</td></tr>
<tr><td>Processor</td><td colspan="2">1.0 GHz VIA Eden dual core processor</td></tr>
<tr><td>RAM</td><td colspan="2">4GB DDR3</td></tr>
<tr><td>Floating point</td><td colspan="2">64 bit</td></tr>
<tr><td>Non-volatile storage</td><td colspan="2">32GB mSATA SSD or 250GB SATA drive
Non-volatile storage (NVS) can retain data indefinitely without loss of data integrity.</td></tr>
<tr><td>Time of day clock (RTC) accuracy</td><td colspan="2">Maximum drift of ±2 seconds/day at 25°C.</td></tr>
<tr><td>Elapsed time clock (internal timing) accuracy</td><td colspan="2">± 0.01% maximum</td></tr>
<tr><td>Video</td><td colspan="2">Standard 15-pin VGA connector</td></tr>
<tr><td>Maintenance ports[†]</td><td colspan="2">Two Type A USB 2.0
SD standard card slot
Dual function Audio out/Microphone in jack (3.5mm four-pin TRRS)</td></tr>
<tr><td>Power requirements</td><td colspan="2">1.8 A at 24 VDC (18–32 VDC)
LPS or Class 2 power supply required.</td></tr>
<tr><td>Serial Communications</td><td colspan="2">One RS-232 RJ-45 port
<table><tr><td>ICRXIBN7x000A-CA versions and earlier</td><td>COM2</td></tr><tr><td>ICRXIBN7x001A</td><td>COM1</td></tr></table></td></tr>
<tr><td>Ethernet Communications</td><td colspan="2">Two Ethernet (10, 100, 1000 Mbit/s) RJ-45 ports</td></tr>
</table>

[†] Intended only for temporary connection.

Environmental Specifications

Note: The Box IPC shall be installed in a location that is not exposed to corrosive gases or liquids, rain, or direct sunlight, and that meets the environmental specifications listed below.

Vibration[1]	**IEC60068-2-6**	10 - 57 Hz, 0.006 in. displacement peak-peak 57 - 500 Hz, 1.0 g acceleration
Shock	**IEC60068-2-27**	15 g, 11ms
Ambient Operating Temperature[2] ICRXIBNxE00xA ICRXIBNxM00xA		-25°C to +65°C: [inlet] (-13° F to 149°F) 0°C to +40°C: [inlet] (32° F to 104°F)
Storage Temperature		-40°C to +85°C (-40°F to 185°F)
Humidity		5% to 95%, non-condensing
Environment	**UL60950-1**	Pollution Degree 2
Altitude	**UL60950-1**	0–2000 m

[1] Applies only to IPCs with solid state hard drive (ICRXIBNxE00xA).

[2] For ambient temperatures greater than 50°C (122°F), the unit must be installed in a *restricted access area,* as defined below.

Warning

If the Box IPC is operating in ambient temperatures greater than 50°C (122°F), its exterior temperatures may be too hot to touch safely. To avoid burn hazards, the unit must be installed in a *restricted access area,* as defined by:

- **Access can only be gained by *service persons* or by *users* who have been instructed about the reasons for the restrictions applied to the location and about any precautions that shall be taken; and**
- **Access is through the use of a tool or lock and key, or other means of security, and is controlled by the authority responsible for the location.**

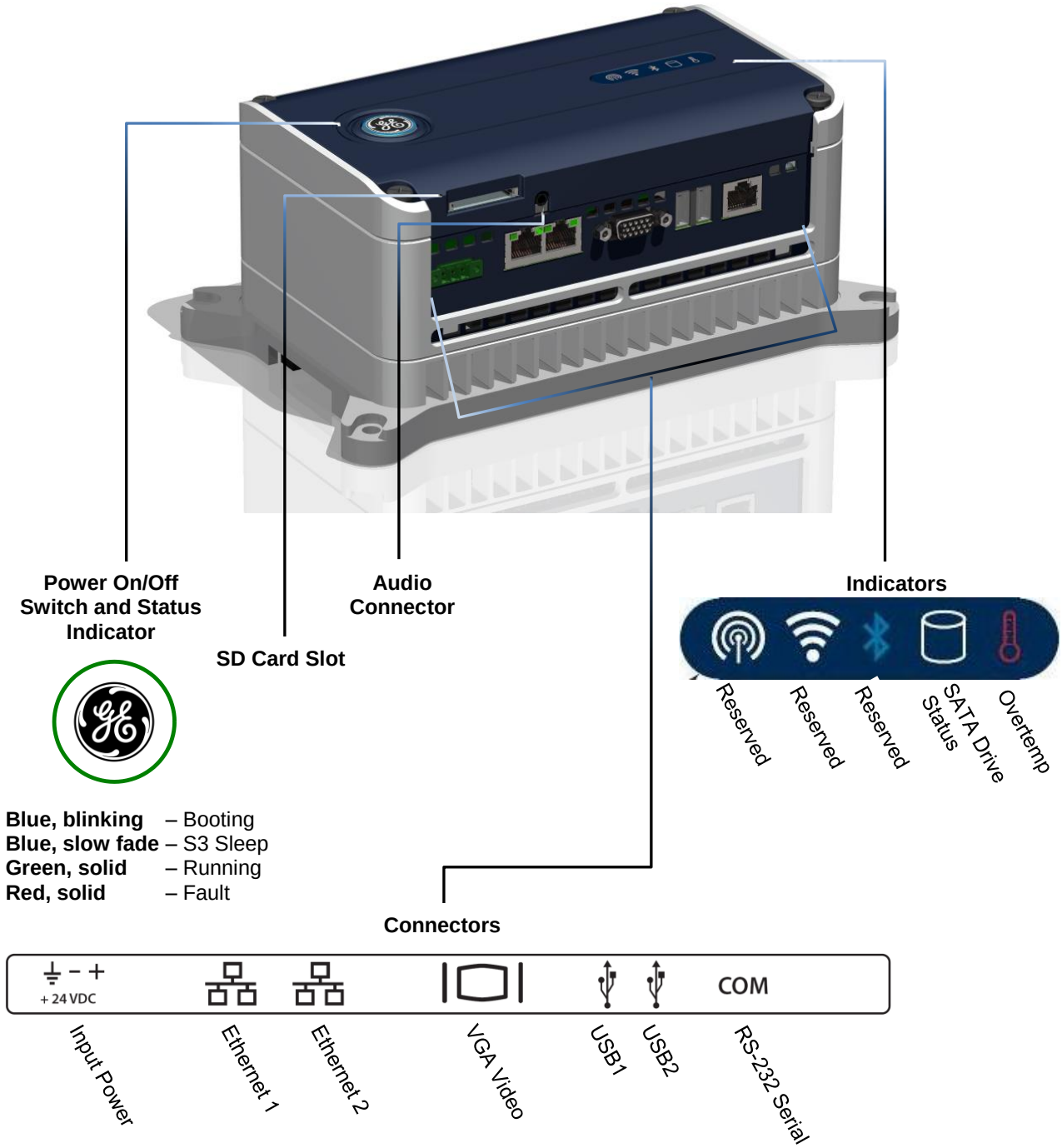
Pollution Degree 2

A Pollution Degree 2 environment as defined by UL60950-1:

Pollution Degree 2 applies where there is only non-conductive pollution that might temporarily become conductive due to occasional condensation.

Note: For additional product standards and agency approvals, refer to Appendix A.

RXi Box IPC User Features



Power On/Off Switch and Status Indicator Operation

Normal Operation [†]	***Action***
Power up the IPC	Press and hold the button for at least ½ second. If powering up from a no-power state, the ring LED blinks blue while the IPC is booting and is solid green when the IPC is up and running. For ICRXIBN7x000A-CA or earlier only: If the system has been shut down, but power has not been cycled, the ring LED immediately turns solid green. For all other versions the ring LED blinks blue for 40 seconds before changing to solid green.
Shut down the IPC	Press and hold the button briefly (between 100ms and 4 seconds). The ring LED stays green while the IPC is shutting down and then turns off when the IPC is powered down.
Sleep Mode	The default BIOS settings when shipped from the factory are: • "Enable Hibernation" is disabled • ACPI Sleep State is "S1 (CPU Stop Clock)" The default settings send IPC to sleep state S1. ICRXIBN7x000A: The ring LED stays green while the IPC is in Sleep State S1. The ring LED turns off while the IPC is in Sleep State S3 ICRXIBN7x001A: The ring LED stays green while the IPC is in Sleep State S1. The ring LED fades blue while the IPC is in Sleep State S3.
Forced Shut down	**Caution:** Use this option only if the operating system is non-responsive: Press the button for at least 4 seconds. The ring LED turns off.

[†] The ring LED displays solid red to indicate a fault, including Overtemp condition.

IPC Status Indicators Operation

Indicator	***State***	***Description***
SATA Drive Status	White, blinking	Read/write access on SATA drive.
Overtemp	Red, solid	The IPC's internal temperature has exceeded the maximum allowable value. To recover, let the IPC cool, then press the Power On/Off switch.

Ethernet Port LEDs Operation

Each Ethernet port has two LED indicators, **ACTIVITY** and **LINK**.

LED	***LED State***	***Operating State***
ACTIVITY	Blinking, Green	Traffic is detected at the port.
LINK	On, Green	The link is operational.

Resume Power Mode Operation

UEFI Setting for "Resume after Power loss"	**ICRXIBN7x001A RXi Box IPC Behavior**
[On - default]	After restoring power, the unit will always restart without having to press the button.
[Off]	After restoring power, you will always have to press the button to start the unit.
[Last state]	The chipset remembers the last state. After restoring power: - A clean Win7 shutdown requires user to press the button to start the unit - The unit will restart without the button press if power is cycled without a clean Win7 shutdown

(For ICRXIBN7x000A-CA or earlier: unit always operates in Last state despite UEFI setting)

Sleep Mode Setting Options and Ring LED Status Indicator Operation

UEFI Hibernation Setting	**UEFI Sleep State Setting**	**Start> Shutdown> Sleep**	**Power Button to Sleep**	**Timeout to Sleep**	**Recovers by pressing:**
Disabled	S1(CPU Stop Clock)	Solid Green	Solid Green	Solid Green	Keyboard, button
Disabled	S3(Suspend to RAM)	Solid Green	Solid Green	Blue Fade	Keyboard, button
Enabled	S3(Suspend to RAM)	Blue Fade	Blue Fade	Blue Fade	Keyboard, button
Enabled	S1(CPU Stop Clock)	Solid Green	Solid Green	Solid Green	Keyboard, button

Default UEFI settings are Hibernation Disabled and Sleep State to S1.

Chapter 2

Unpacking and Initial Startup

This chapter contains information you need to perform a pre-installation check of your RXi Box IPC.

Before installing and using the IPC, the following steps should be completed.

- Unpacking and Inspection
- Initial Startup
- Configuring Ethernet Communications

Unpacking and Inspection

Upon receiving your RXi Box IPC, carefully inspect all shipping containers for damage. If any part of the system is damaged, notify the carrier immediately. The damaged shipping container should be saved as evidence for inspection by the carrier.

As the consignee, it is your responsibility to register a claim with the carrier for damage incurred during shipment. However, we will fully cooperate with you, should such action be necessary.

After unpacking the Box IPC, **record all serial numbers**. Serial numbers are required if you need to contact Customer Care during the warranty period. All shipping containers and all packing material should be saved should it be necessary to transport or ship any part of the system.

Verify that all components of the system have been received and that they agree with your order. If the system received does not agree with your order, contact Customer Care. If you need technical help, contact Technical Support. For phone numbers and email addresses, see the "Contact Information" page in the front of this manual.

Before you attempt to power up the IPC for the first time, inspect the unit for loose or damaged components. If damage is observed (for example, in the form of bent component leads or loose components), contact GE Intelligent Platforms for additional instructions. Depending on the severity of the damage, it may be necessary to return the product to the factory for repair.

Do not apply power to the unit if it has visible damage. Applying power to a unit with damaged components may cause additional damage.

Initial Startup

You will need the following:

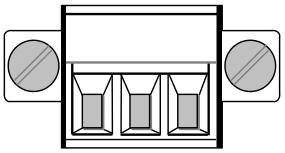
- 24VDC, 18–32V range, 48W power supply, Class 2 or LPS

  The product is supplied with a Phoenix Contact part number 1827716 or 1851245 (spring loaded/quick release) power terminal block for use with a power supply. The power supply used must be a UL Listed (or equivalent) Limited Power Source (LPS) or Class 2 power source.
- Power cord with 28 AWG –16 AWG wires
- VGA-compatible video monitor
- USB-compatible keyboard
- USB-compatible mouse (optional)

1. Attach the power supply output to the IPC's DC power plug using 16 to 28 AWG (1.31 to 0.08mm^2). For frame ground, use shortest length 16 AWG (1.31mm^2) wire to ground.

   Recommended wire stripping length is 7mm (0.28 in.).

   Tighten the screws that hold the wires to a torque of 4 in-lb (0.452 Nm).



2. Insert the plug into the IPC's Input Power connector and securely tighten the attaching screws.

   The torque range for the attaching screws is 1.95–2.21 in-lb (0.22–0.25 Nm).
3. Connect a VGA-compatible video monitor and tighten down its attaching screws. Also attach a USB-compatible keyboard, and if desired, a USB-compatible mouse.
4. Power up the unit and check whether any concealed damage has been caused by incorrect transportation, operating/storage conditions or handling.

   For ICRXIBN7x000A-CA or earlier units only: to power up the unit, press the Power On/Off switch for at least ½ second. ICRXIBN7x001A will start up once power is applied, without the need to depress the On/Off switch.

   *If you notice any damage, **remove power from the unit immediately** and secure it against unintentional use.*

   During normal power up and operation, the Power On/Off status indicator display is:

   - *Blinking blue* while the IPC is starting up
   - *Solid green* when the IPC has completed startup and is running
   - *Solid green* when the IPC is restarted without a loss of power

Models that include the Windows 7 operating system (ICRXIBN7xxxxx):

5. The Windows 7 operating system starts in accordance with the BIOS settings. During power up, you should see the normal operating system starting displays on the monitor.
6. ICRXIBN7x001x models contain Windows Embedded Standard 7and do not require license activation.
7. For ICRXIBN7x000x, activate the Windows 7 Professional operating system license during initial power-up by following the on-screen prompts. The Windows 7 product key is printed on the Microsoft Certificate of Authenticity label, located on the right side of the IPC.

8. To activate the operating system online, you will need to first configure the IPC's Ethernet settings for operation on your network.

Note: The ICRXIBN0E000A and ICRXIBN0M000A models come with two hard drive options: a blank 32GB mSATA solid state drive or a blank 250GB SATA magnetic hard drive. You will need to load the desired operating system and associated drivers to fully utilize the I/O interfaces.

Configuring Ethernet Network Communications

Before configuring your industrial computer for operation on a network, consult your network administrator. Duplicate TCP/IP addresses and duplicate computer names on the same network can cause network problems.

Default Factory settings are to obtain an IP address automatically

1. For both ports, if necessary, use the operating system's network configuration tool to change the IP address and subnet mask from the factory settings to the correct settings for your network. If your network's IP addresses are controlled by a DHCP server, the setting should be "*Obtain an IP address automatically".*

Port	***Network Adapter Name***
Ethernet 1	*VIA Velocity*
Ethernet 2	*Intel 82574L*

2. When prompted by the operating system, restart the IPC.
3. Connect the IPC to your Ethernet network.

Note: For Ethernet port and cabling information, refer to chapter 4.

Pinging TCP/IP Ethernet Interfaces on the Network

PING is the name of a program used on TCP/IP networks to test reachability of destinations by sending them an ICMP echo request message and waiting for a reply. Most nodes on TCP/IP networks, including the PACSystems Ethernet Interface, implement a PING command.

You should ping each installed Ethernet device. When the Ethernet device responds to the ping, it verifies that the device is operational and configured properly.

Pinging the Ethernet Interface from a UNIX Host or Computer Running TCP/IP Software

A *ping* command can be executed from a UNIX host or computer running TCP/IP (most TCP/IP communications software provides a *ping* command) or from another Ethernet device. When using a computer or UNIX host, you can refer to the documentation for the *ping* command, but in general all that is required is the IP address of the remote host as a parameter to the *ping* command. For example, at the command prompt type:

```
ping  10.0.0.1
```

Determining if an IP Address is Already Being Used

Note: This method does not guarantee that an IP address is not duplicated. It will not detect a device that is configured with the same IP address if it is temporarily off the network.

It is very important not to duplicate IP addresses. To determine if another node on the network is using the same IP address:

1. Disconnect your industrial computer from the LAN.
2. Ping the disconnected industrial computer's IP address. If you get an answer to the ping, the chosen IP address is already in use by another node. You must correct this situation by assigning a unique IP address.

Shutting Down the Computer

Caution

***For ICRXIBN7xxxxx Models,* to avoid damaging files, always shut down Windows software before removing power from the IPC.**

Caution

***For ICRXIBN7xxxxx Models,* do not disconnect external devices, such as a flash drive or external DVD drive without first using the Windows Safely Remove Hardware feature to eject the device. Failure to observe this precaution could result in damage to data.**

1. To shut down the IPC, press the Power On/Off switch briefly (between 100ms and 4 seconds), or select Shut Down from the Windows Start menu.

   This provides a controlled shutdown of the operating system before removing power from the system. The status indicator stays solid green while the IPC is shutting down and then turns off when the IPC has finished powering down.
2. To completely shut down the IPC, turn off or remove the power supplying the IPC.

Disabling Operating System Shutdown (ICRXIBN7xxxxx Models)

The current On/Off button operation requires only a 100ms press to begin a controlled Windows shutdown. You can change this setting in Windows to require pressing the On/Off switch for 4 seconds to immediately perform a hard shutdown that forces the unit off without first shutting down Windows. This provides some protection against unplanned shutdowns caused by accidentally pressing the switch. To totally disable power off, you can use the hardware switch setting as noted below.

If a hard shutdown is acceptable, you can change the OFF button to a 4 second press time through Windows 7 settings as follows:

1. Start the Windows 7 Control Panel.
2. Select *Hardware and Sound* section (if displayed).
3. Select *Power Options.*
4. Select *Choose what the power buttons do.*
5. Change the *When I press the power button* selection to *Do Nothing.*
6. Save the changes.

Note: To totally disable power off, you can set a switch that is located on the underside of the front panel. This disables the ability to shut down the IPC using the On/Off switch and prevents unplanned shutdowns caused by accidentally pressing the On/Off switch. For more information, see "Disabling the Off Switch" in chapter 3.

Chapter

3

Hardware Installation

This chapter describes the procedures for the safe location and securing of the RXi Box IPC.

Note: The proper method for removing power from the unit is to switch off power at the circuit breaker.

Installation Guidelines

The RXi Box IPC can be mounted on a DIN rail using the optional Backplate (ICRXIACCBPL) or directly onto a panel. Mounting methods are described on pages 14 through 19.

- The IPC must be mounted with its cooling fins vertical to ensure adequate airflow.
- The panel should be capable of supporting the weight of the industrial computer without distortion to the panel.
- Adequate airflow around the exterior of the unit is essential to maintain safe interior temperature of the unit. Inlets and outlets must not be obstructed. For details, see page 13.
- You may need to allow more space for installation of cables and connectors than what is required for heat dissipation. To avoid impacting mechanical reliability and signal quality, cable installation must comply with the minimum bend radius specified by the cable manufacturer.

Grounding

Note: These grounding connections serve as a path for reducing noise interference and radiated emissions and are required for the IPC to comply with the standards identified in Appendix A.

- The DIN rail or panel the IPC is mounted on must have a safety ground connection to protective earth. This ground wire must be at least #16 AWG (1.31mm^2) and should be as short as possible.

  If using the ICRXIACCBPL to mount the Box IPC, add a ground wire from the M8 threaded hole on the metal DIN Backplate (M8 screw included) to protective earth.
- The frame ground connection on the power plug must be a 16 to 28 AWG (1.31to 0.08mm^2) wire with shortest possible length. It is recommended that these ground wires terminate in a star wiring pattern at the same grounding point.

Mounting Orientation

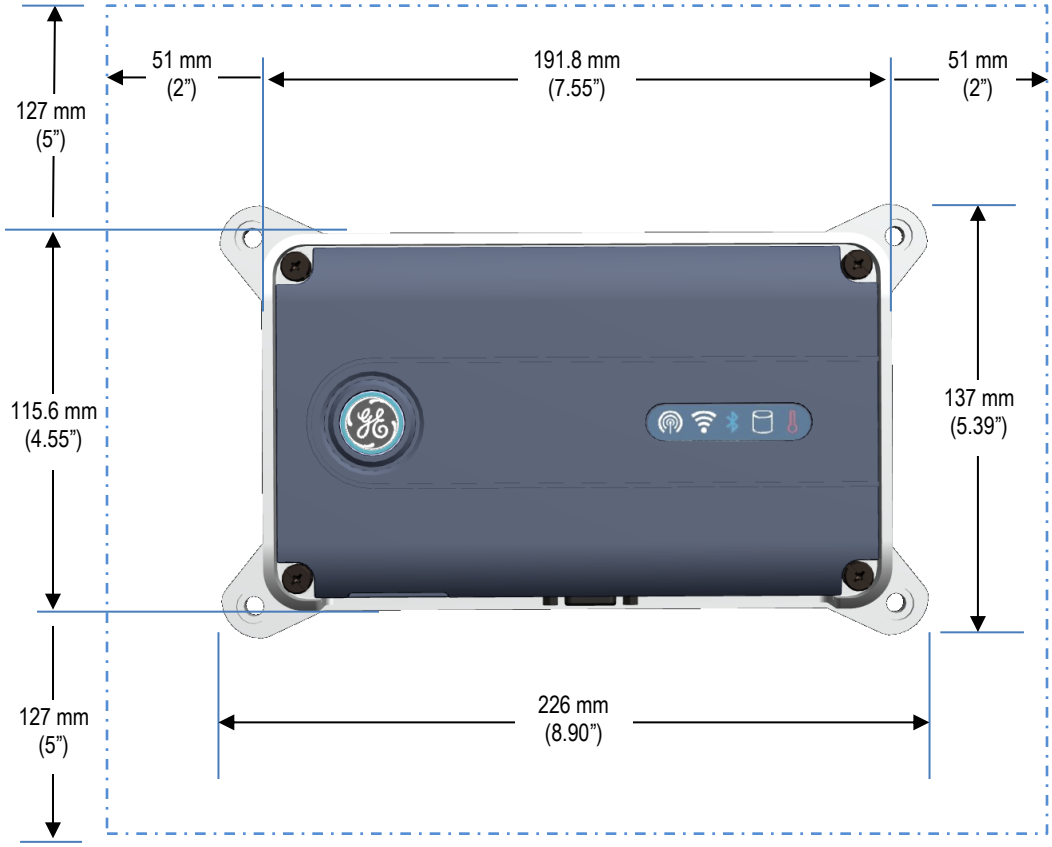
The cooling fins on the back of the IPC must be vertical. However the unit can be mounted with the front panel connectors oriented either up or down.

Correct

Incorrect

Dimensions and Clearances for Installation

Dimensions	IPC:	191.8 mm x 115.6 mm x 81.3 mm *(7.55 in x 4.55 in. x 3.2 in)*
	Backplate:	226 mm x 137 mm x 12 mm *(8.90 in. x 5.39 in. x 0.47 in.)*
Minimum clearances for heat dissipation	Each side:	51mm (2 inches)
	Top and bottom:	127mm (5 inches)



Mounting Procedures

Using the optional ICRXIACCBPL Backplate, the IPC can be mounted on a DIN rail or a panel. You can also mount the IPC directly onto a panel without using a Backplate.

The IPC has four captive machine screws in its base for attaching the unit to the Backplate or panel.

Mounting the IPC on a DIN Rail

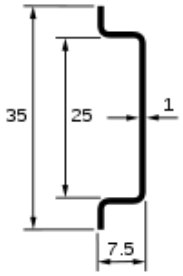
You will need the following:

One 2.5mm hex driver (included with the RXi IPC)

One flat**head** (or large Phillips) screwdriver

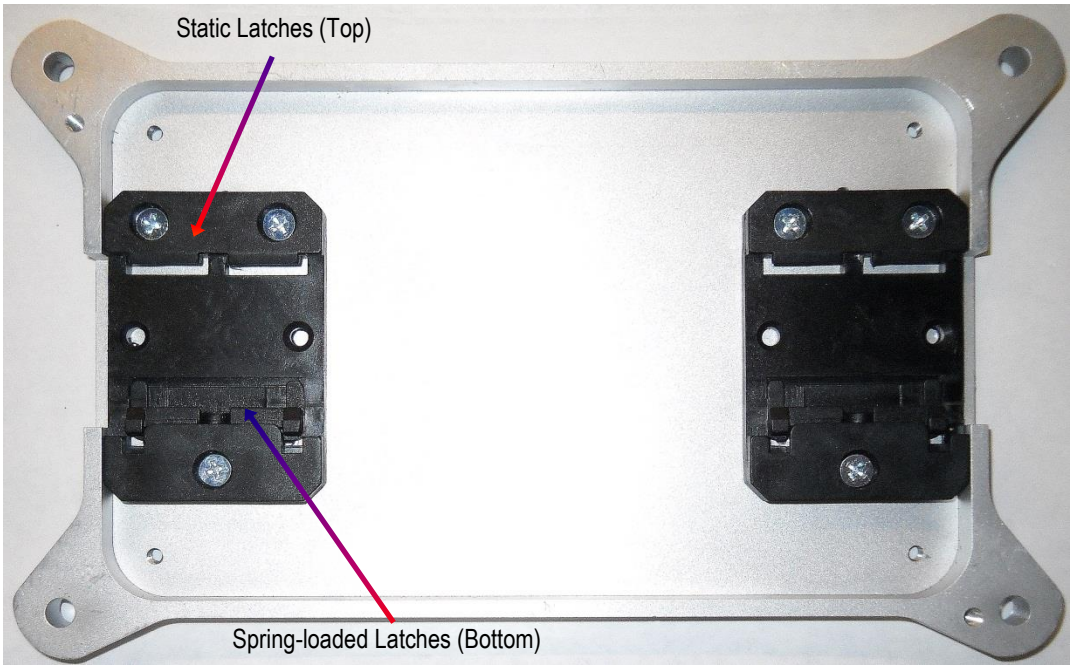
One Backplate, ICRXIACCBPL

When installed on the Backplate, the IPC mounts to a standard EN 50022 DIN rail with the following dimensions.



Backplate Orientation

The Backplate should be installed with the static latches on top and the spring-loaded latches at the bottom.



Backplate, Rear View

1. Install the IPC on the Backplate.
   a. Place the IPC and Backplate on a flat surface.
   b. Loosen the four captive screws on the IPC's front panel and remove the front panel.

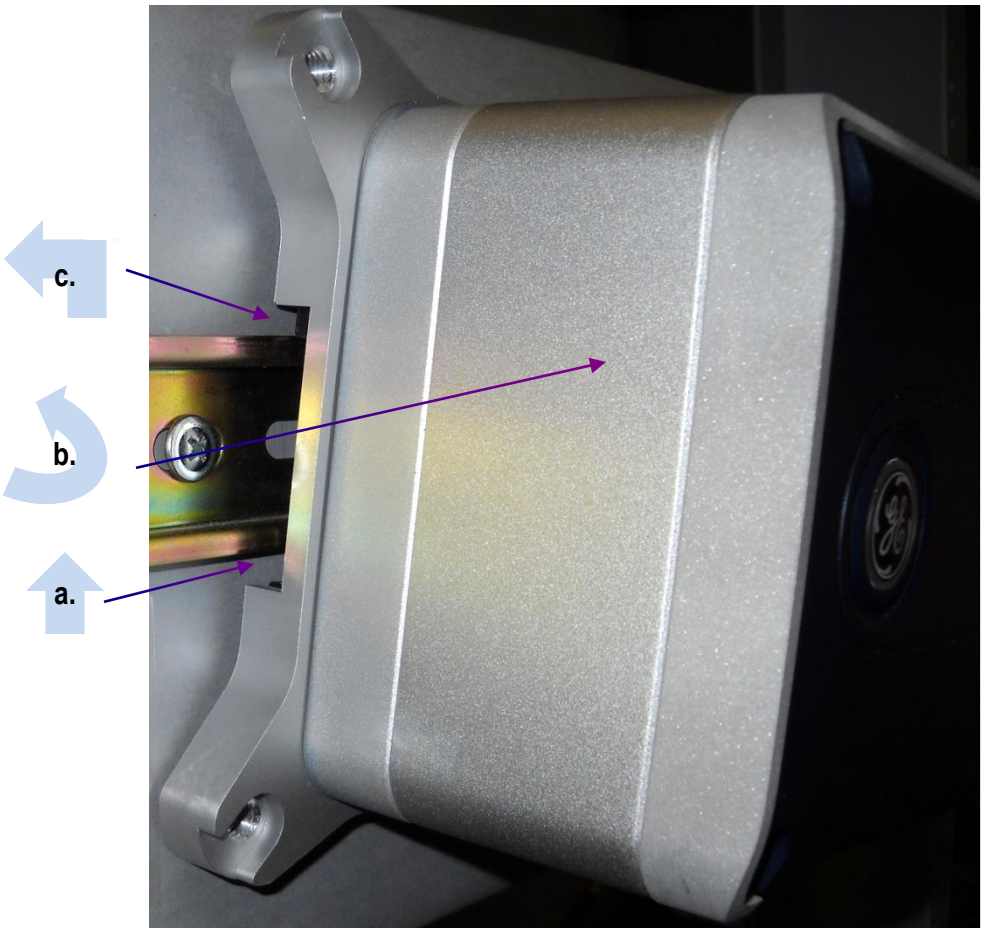
c. Make sure the top of the IPC is positioned at the top of the Backplate (static latches on top). For Backplate orientation, refer to page 14.

d. Align the IPC's four mounting screws with the mounting holes in the Backplate.

e. Using the hex driver, tighten the mounting screws.

f. Replace the front panel on the IPC and use the screwdriver to hand-tighten the four captive screws to secure it.

2. Install the unit on the DIN Rail.
   a. Start with the top of the unit rotated approximately 20º from the panel.
   b. Engage the spring-loaded latches at the bottom of the black DIN rail clip (attached to the adaptor) on the DIN rail.
   c. Rotate the unit up and press it upward to engage the top (static) latches with the rail.
   d. Press the unit into place.



Mounting the IPC on a Panel Using a Backplate

You will need the following:

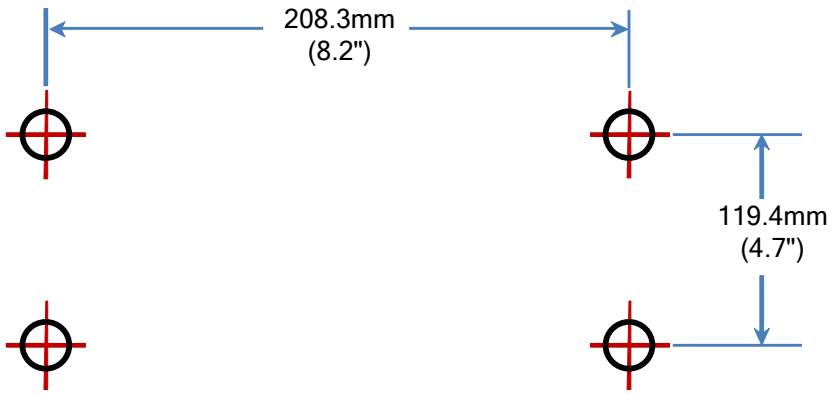
Four machine screws with maximum thread size ¼-20 (standard) or M6 (metric)

Driver for selected machine screws

One ICRXIACCBPL Backplate

1. Install the IPC on the Backplate. (See step 1 on page 14.)
2. Drill four holes in the panel based on screw selection using the spacing shown in the following drawing (if holes are tapped recommended minimum panel thickness should be equal to thread diameter).

Drilling Pattern for Panel Mounting Using a Backplate



3. Using the four mounting screws, attach the IPC/Backplate assembly to the panel.

Mounting the IPC Directly on a Panel

You will need the following:

One flathead (or large Phillips) screwdriver

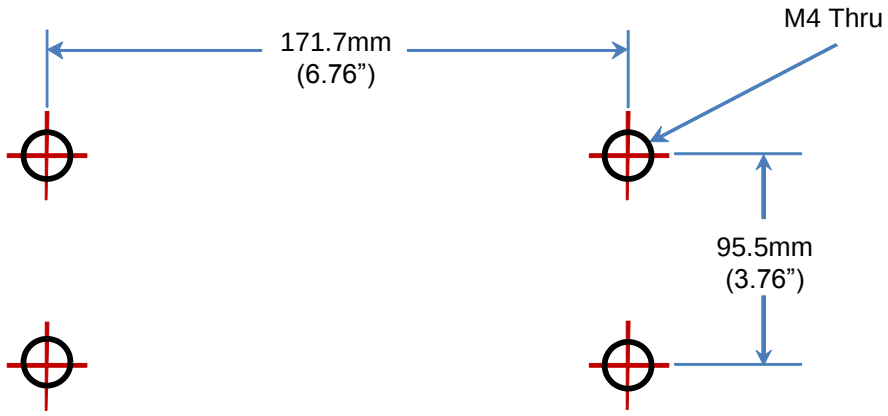
One 2.5mm hex driver (included with the RXi IPC)

#29 (0.116”) drill bit and M4x0.7 tap

The IPC has four captive machine screws in its base for attaching the unit to the panel.

1. Drill four mounting holes using the spacing shown in the following drawing and tap M4x0.7 thru.

Drilling Pattern for Direct Panel Mounting



2. Place the IPC on a flat surface.
3. Loosen the four captive screws on the IPC’s front panel and remove the front panel.

4. Align the IPC's four mounting screws with the mounting holes in the panel.
5. Using the hex driver, hand-tighten the mounting screws.

6. Replace the front panel on the IPC and hand-tighten the four screws to secure it.

Replacing the RTC Battery

The real-time clock is backed up by a lithium coin cell battery, IC690ACC001. The RTC battery has an estimated life of 5 years and must be replaced every 5 years on a regular maintenance schedule. There are no diagnostics or indicators to monitor RTC battery status.

If the RTC battery fails, the CPU date and time is reset to 12:00 AM, 01-01-2008 at startup. The CPU operates with a failed or missing RTC battery; however the initial CPU TOD clock information will be incorrect.

Caution

To avoid damage from electrostatic discharge, adhere to the following precautions when opening the IPC enclosure:

- **Wear a properly functioning antistatic strap and be sure that you are fully grounded. Never touch any components inside the IPC unless you are wearing an antistatic strap.**
- **The IPC should be placed on a static-safe surface, facilitated by antistatic mats.**
- **Extra caution should be taken in cold, dry weather, when static charges can easily build up.**

You will need the following:

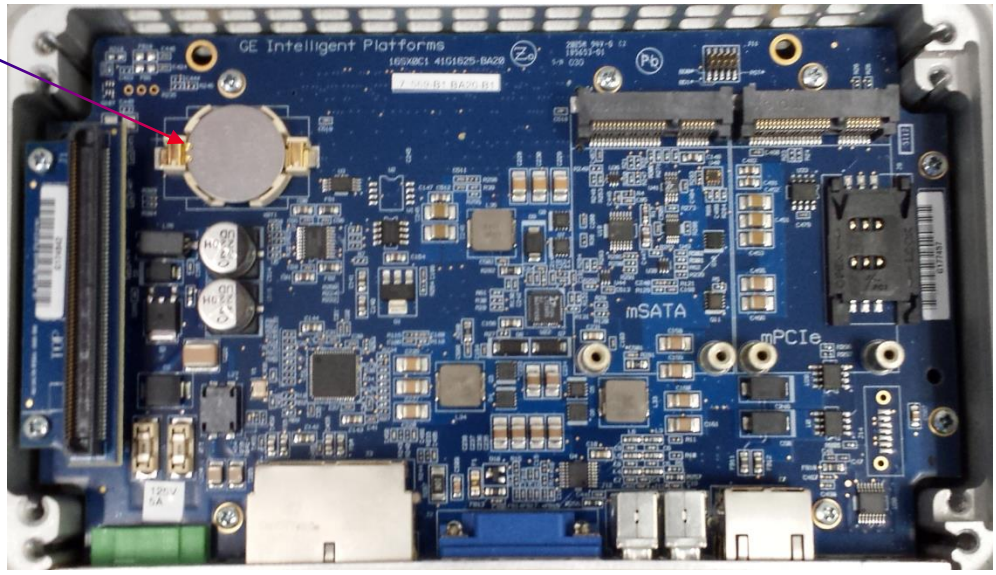
One flat (or large Phillips) screwdriver

One small Phillips screwdriver

IC690ACC001 battery

1. Remove power from the IPC by disconnecting the power cable.
2. Loosen the four captive screws on the IPC's front panel and remove the front panel.
3. Remove the IPC from its mounting location and place it on a static-safe surface.
4. Remove the four Phillips-head screws that secure the interior lid to the IPC chassis, then lift off the interior lid.

5. Remove the RTC battery from the retaining clip, being careful to not bend the positive terminal clip.



Warnings

Use of a different type of battery than that specified here may present a risk of fire or explosion.

Battery may explode if mistreated. Do not recharge, disassemble, heat above 100°C (212°F) or incinerate.

Note: For proper disposal, refer to Battery Disposal document 82A1540-MD01.

6. Install the new battery in the retaining clip.

   The replacement battery must be IC690ACC001 from GE Intelligent Platforms.

   Install the battery with the positive (+) side up. That is, with the + side away from the circuit board. The coin cell must be inserted at an angle to go under the positive terminal clip and then slid into the carrier and snapped into place.

7. Replace and secure the interior lid with four Phillips-head screws.
8. Replace the front panel on the IPC and hand-tighten the four screws to secure it.

Disabling the Off Switch

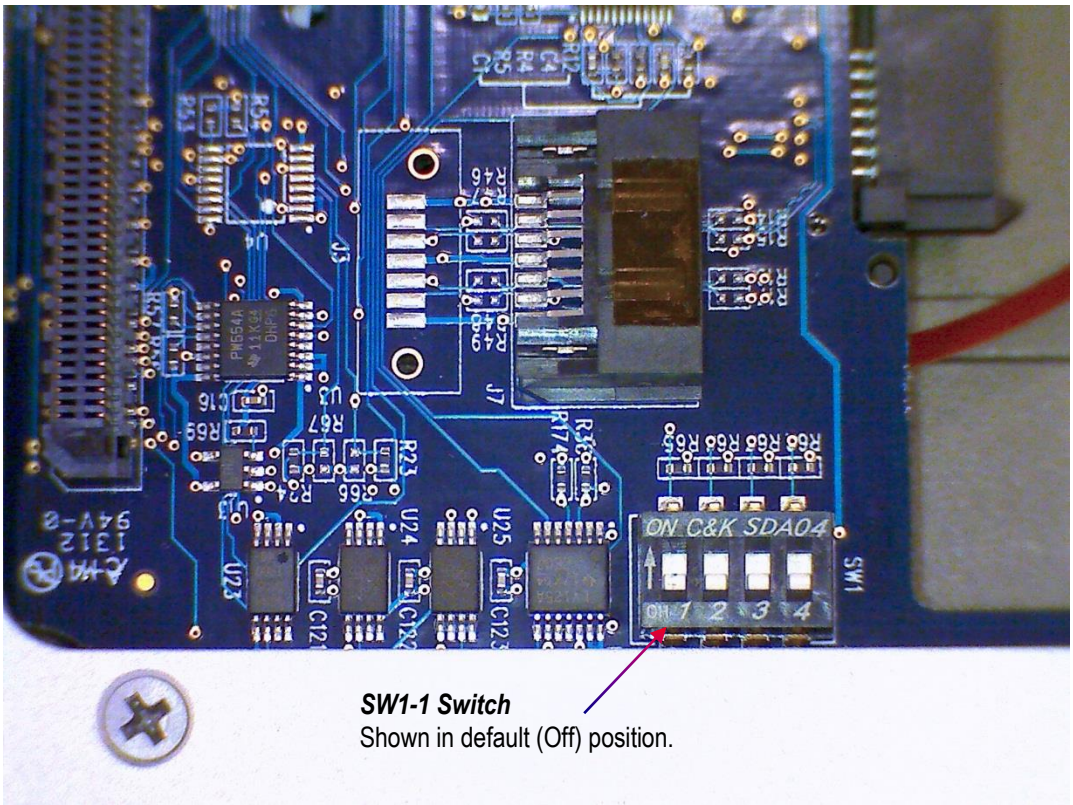
You can disable powering off using the On/Off switch by changing the setting of SW1-1, located on the underside of the IPC's front panel. This prevents unplanned shutdowns caused by accidentally pressing the On/Off switch.

The disabled setting affects only the ability to power down the unit. You can still use the On/Off switch to power on the unit.

You will need the following:

One flat (or large Phillips) screwdriver

1. Turn off or remove the power supplying the IPC.
2. Loosen the four captive screws on the IPC's front panel and remove the front panel.
3. Move the SW1-1 switch from the default (Off) position to the On position.



SW1-1 Switch
Shown in default (Off) position.

4. Replace the front panel on the IPC and hand-tighten the four captive screws to secure it.

Chapter

4

Connectors and Cabling

This chapter describes the connector layout and cabling requirements on the RXi box IPC. Power and communication connectors are described in this section.

All connectors are provided on the bottom panel of the IPC.

Summary of Cabled Ports

Port Name	Usage	*Maximum Cable Length*	*Shielding Required*
24 VDC	Permanent[2]	3 m (9.8 ft.)	No
Ethernet 1	Permanent[2]	100 m (328 ft.)	Yes[1]
Ethernet 2	Permanent[2]	100 m (328 ft.)	Yes[1]
RS-232 Serial	Permanent[2]	10 m (32.8 ft.)	Yes[1]
USB1	Maintenance[3]	5 m (16.4 ft.)	Yes[1]
USB2	Maintenance[3]	5 m (16.4 ft.)	Yes[1]
VGA Video	Permanent[2]	7.6 m (25 ft.)	Yes[1]
SD (Secure Digital) slot	Maintenance[3]	NA	NA
Audio	Maintenance[3]	2 m (6.5 ft.)	No

[1] Shielding is required to be in compliance with the standards identified in Appendix A.

[2] Can be permanently connected while the system is running.

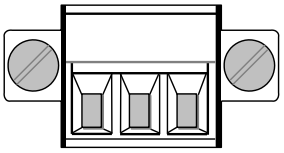
[3] Intended only for temporary connection.

Input Power

The IPC requires:

- 24VDC, 18–32V range, 48W power supply, Class 2 or LPS

  The IPC is supplied with a Phoenix Contact part number 1827716 or 1851245 (spring loaded/quick release) power terminal block for use with a power supply. The power supply used must be a UL Listed (or equivalent) Limited Power Source (LPS) or Class 2 power source.



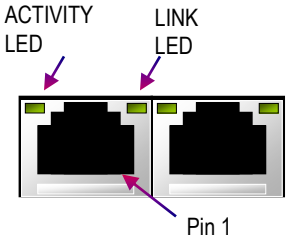
- Power cord with 28 AWG –16 AWG wires.

To connect the DC power supply, refer to “Initial Startup” in chapter 2.

Note: There are no user-serviceable fuses in the IPC.

Ethernet Communication Ports

The IPC provides two RJ-45 Ethernet network port connectors that support 10BASE-T, 100BASE-TX and 1000BASE-T communications. Either or both of these ports may be attached to other Ethernet devices. Each port automatically senses the data rate (10, 100 or 1000Mbps), duplex (half duplex or full duplex), and cabling arrangement (straight through or crossover) of the attached link.



Caution

The two ports on the Ethernet Interface must not be connected, directly or indirectly to the same device. The hub or switch connections in an Ethernet network must form a tree, otherwise duplication of packets may result.

Ethernet Media

The IPC can operate on 10BASE-T, 100BASE-TX or 1000BASE-T media via its network ports. All three arrangements can use up to 100m of twisted pair cable between each node and a switch, hub, or repeater.

Note: For all three types, shielded twisted pair (STP) cable is required to maintain CE compliance.

10BASE-T: Two pairs of wire are used, one for transmission, and the other for receive.

100BASE-TX: Two pairs of wire are used, one for transmission, and the other for receive.

1000BASE-T: Four pairs of wire are used for simultaneous transmission and receive in both directions.

Ethernet Port Pin Assignments

Pin No.	*10BASE-T/100BASE-TX*		*1000BASE-T*	
	Signal	*Description*	*Signal*	*Description*
1	TD+	Transmit Data +	BI_DA+	Bidirectional pair A+
2	TD-	Transmit Data –	BI_DA-	Bidirectional pair A-
3	RD+	Receive Data +	BI_DB+	Bidirectional pair B+
4	NC	no connection	BI_DC+	Bidirectional pair C+
5	NC	no connection	BI_DC-	Bidirectional pair C-
6	RD-	Receive Data –	BI_DB-	Bidirectional pair B-
7	NC	no connection	BI-DD+	Bidirectional pair D+
8	NC	no connection	BI_DD-	Bidirectional pair D-

Note: Pin assignments are provided for diagnostic purposes only. Ethernet cables are readily available from commercial distributors. We recommend purchasing rather than making cables.

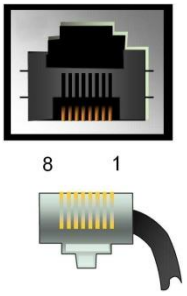
The operation of the Ethernet port LED indicators, **ACTIVITY** and **LINK**, is described in chapter 1.

Serial Communication Port

The serial port provides RS-232 communications through a standard RJ-45 female connector with the following pin assignments.

For maximum cable length, refer to page 25.

RS-232 Serial Port Pin Assignments



RJ-45 Pin	Signal	Description
8	0V	
7	NC	No connection
6	NC	No connection
5	0V	
4	NC	No connection
3	Rx	Receive
2	NC	No connection
1	Tx	Transmit

Notes: The RJ-45 connector shell provides frame ground. To reduce interference, shielded cables are required.

The Serial Communication Port connector is mapped as follows:

ICRXIBN7x000A-CA versions and earlier	COM2
ICRXIBN7x001A	COM1

USB Ports

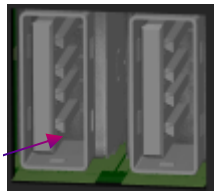
Two ports are provided for connection of USB 2.0 compatible devices, such as a keyboard, mouse, serial communications or data storage device.

For maximum cable length, refer to page 25.

Double-shielded cable that complies with USB 2.0 must be used.

Note: These USB ports are defined as maintenance ports and are intended to be used only as temporary connections.

USB Pin Assignments

Pin	Signal	
4	GND	
3	+Data	
2	-Data	
1	Current Limited +5VDC	Pin 1 

Video Output Port

Video monitor output is provided on the standard 15-pin VGA connector. The pin assignments are shown in the following table. Shielded cable is required.

For maximum cable length, refer to page 25.

Video Pin Assignments

1	RED
2	GREEN
3	BLUE
4	NC
5	GND
6	Red GND
7	Green GND
8	Blue GND
9	+5VDC[1]
10	SGND
11	NC
12	SDA
13	H SYNC
14	V SYNC
15	SCL

[1]There is a 1.1A self-resetting fuse on the 5V signal, pin 9.

SD (Secure Digital) Card Slot

The IPC accommodates a user-supplied SD card for auxiliary storage.

Note: The SD card slot is defined as a maintenance port and is intended to be used only as a temporary connection.

Audio Jack

The IPC provides an Audio out/Microphone in 3.5mm four-pin TRRS combo jack.

Note: The Audio jack is defined as a maintenance port and is intended to be used only as a temporary connection.

For maximum cable length, refer to page 25.

Chapter 5

System Recovery

Recovering from a Drive Failure (ICRXIBN7x000x Models only)

To recover from a drive failure, you will need to re-install the operating system and the device drivers that are provided by GE Intelligent Platforms.

Windows Operating System

To re-install the Windows 7 Professional operating system, refer to http://windows.microsoft.com for instructions.

RXi Box IPC Device Drivers

The drivers and the instructions for installing them are available on the GE Intelligent Platforms Support website, http://support.ge-ip.com.

The drivers consist of:

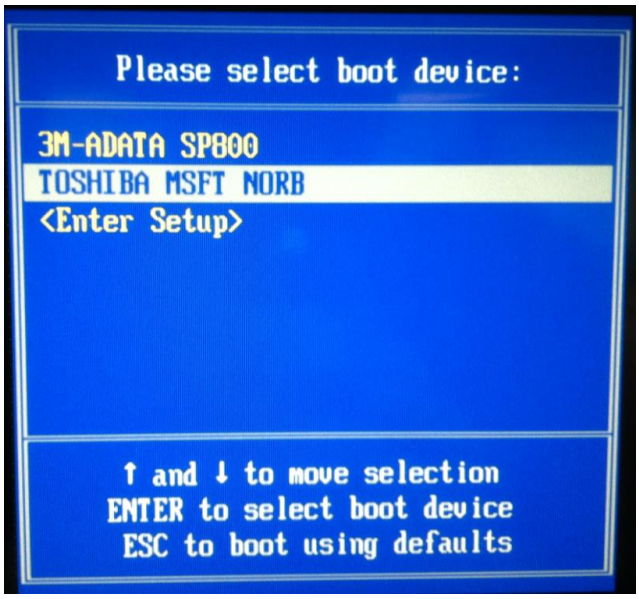
- Ethernet drivers (two)
- SD card reader driver
- VIA Graphics driver

  Note: This improves resolution of the standard Windows graphics driver and is necessary to support sleep states, but is not necessary for operation of a standard video monitor.
- IDT audio codec driver
- Custom GE IP drivers (six)

Recovering from a Drive Failure (ICRXIBN7x001x Models only)

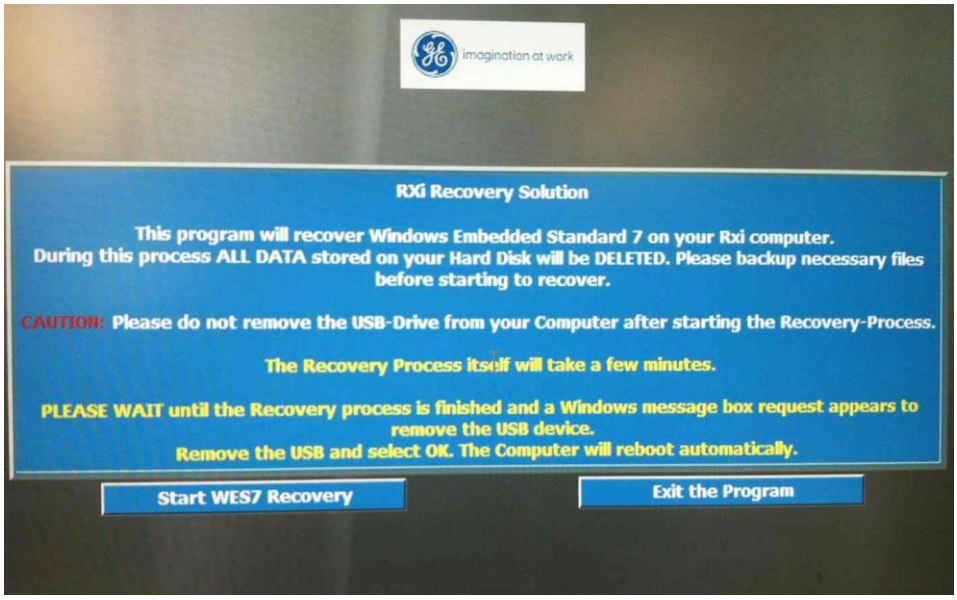
A USB Drive is shipped along with the Windows Embedded Standard 7IPC unit. Retain it in a secure location. Use this drive to recover in the event of drive failure. The procedure is as follows:

1. Power down the RXi system
2. Insert the USB recovery Flash Drive in any available USB port
3. Power on system
    a. As soon as the system turns on, press the <F7> key to display the boot device select menu


Please select boot device:
3M-ADATA SP800
TOSHIBA MSFT NORB
<Enter Setup>
↑ and ↓ to move selection
ENTER to select boot device
ESC to boot using defaults

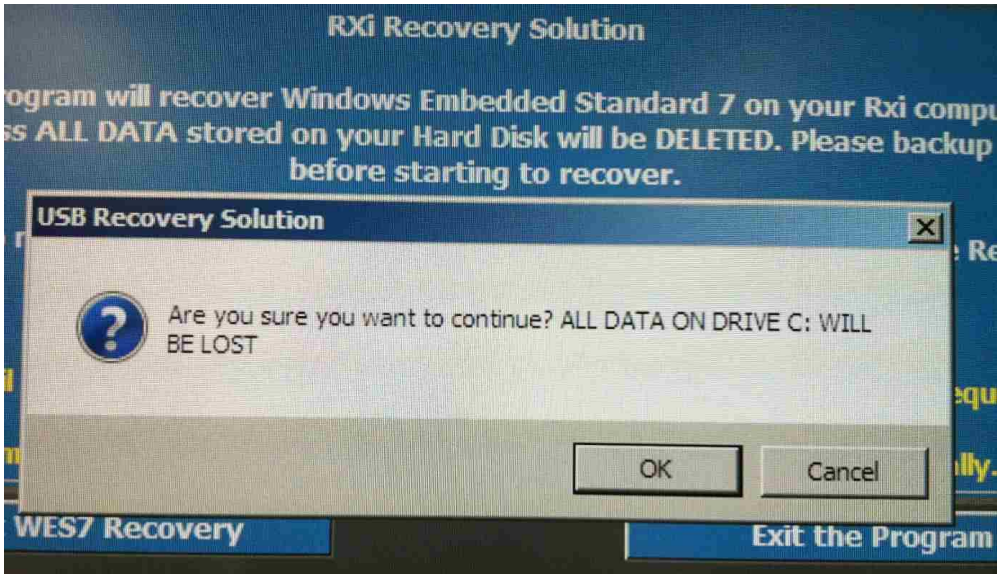
    b. Use the arrow keys (↑↓) too select TOSHIBA MSFT NORB; press <Enter> to select.

4. The RXi will boot to the Window PE (WinPE) on the USB drive. This will take a minute. Wait for the RXi recovery screen to appear.


imagination at work
RXi Recovery Solution
This program will recover Windows Embedded Standard 7 on your Rxi computer.
During this process ALL DATA stored on your Hard Disk will be DELETED. Please backup necessary files before starting to recover.
CAUTION: Please do not remove the USB-Drive from your Computer after starting the Recovery-Process.
The Recovery Process itself will take a few minutes.
PLEASE WAIT until the Recovery process is finished and a Windows message box request appears to remove the USB device.
Remove the USB and select OK. The Computer will reboot automatically.
Start WES7 Recovery
Exit the Program

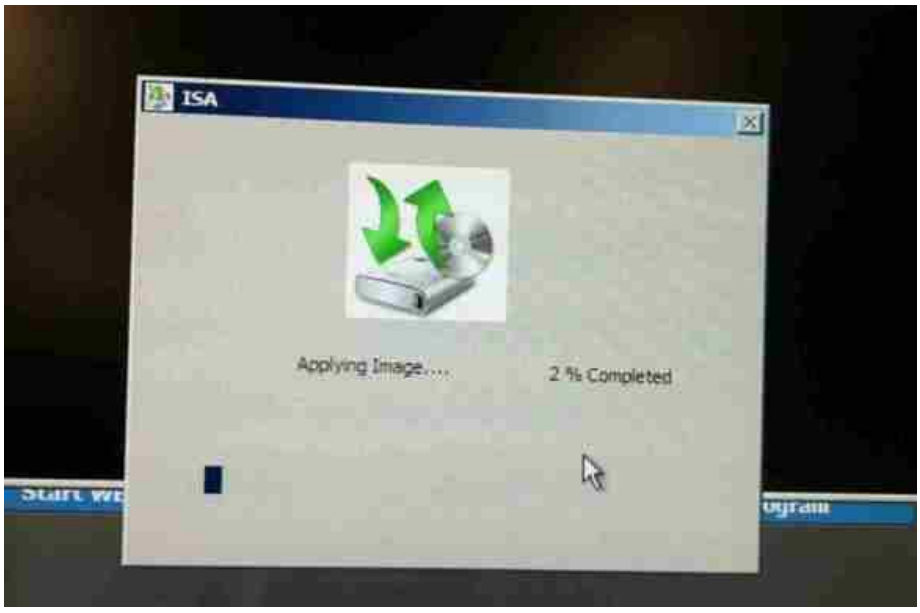
5. Click the 'Start WES7 Recovery' button. Note: clicking the 'Exit the Program' button will abort the recovery and reboot the RXi computer.

6. A warning message will be displayed:

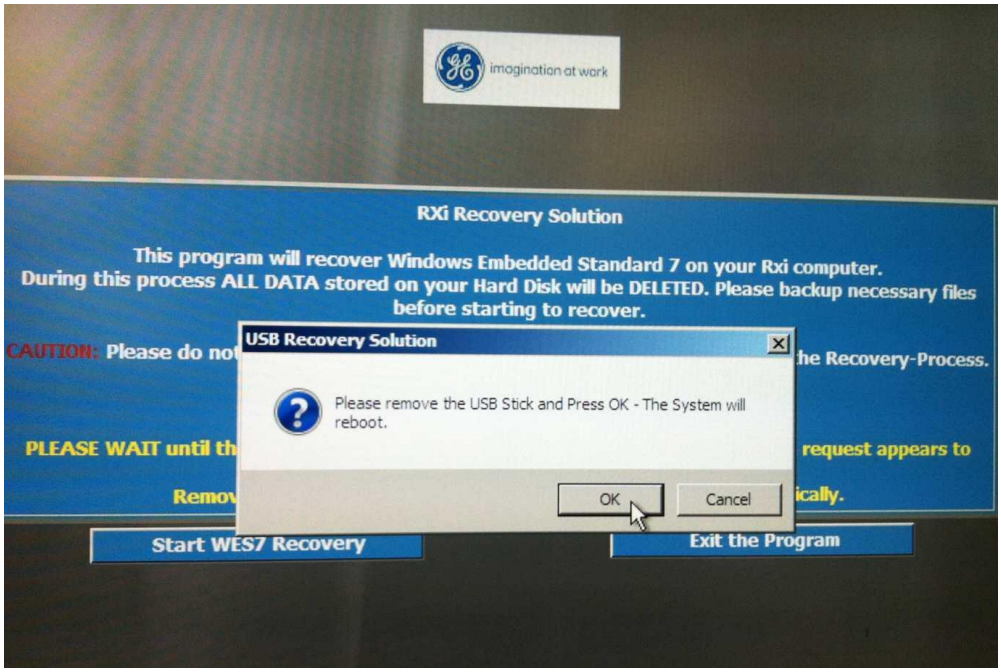

RXi Recovery Solution
ogram will recover Windows Embedded Standard 7 on your Rxi compu
s ALL DATA stored on your Hard Disk will be DELETED. Please backup
before starting to recover.
USB Recovery Solution
Are you sure you want to continue? ALL DATA ON DRIVE C: WILL BE LOST
OK
Cancel
WES7 Recovery
Exit the Program

Click OK to continue the recovery and image the system hard drive. The drive will be reformatted in the process.

7. The image load process will be displayed as follows:



8. When the image load completes, the system will prompt to remove the USB drive:


imagination at work
RXi Recovery Solution
This program will recover Windows Embedded Standard 7 on your Rxi computer.
During this process ALL DATA stored on your Hard Disk will be DELETED. Please backup necessary files before starting to recover.
USB Recovery Solution
Please remove the USB Stick and Press OK - The System will reboot.
OK
Cancel
Start WES7 Recovery
Exit the Program

9. Remove the USB drive and click OK. The system will reboot as a new factory install.

Recovering from an Overtemperature Shutdown (All Models)

If the Box IPC overheats, it will shut down to protect critical components. When this happens, the Overtemp LED will blink on red and then shut off quickly while the entire unit shuts down. The Power On/Off LED turns off at the same time.

To recover, let the Box IPC cool and then press the Power On/Off button to restart. The Box IPC will return immediately to what it was doing when shutdown occurred. If you initiate a complete power cycle instead of restarting immediately, the Box IPC performs the normal power up cycle.

Appendix A Product Certifications and Installation Guidelines for Conformance

This appendix describes the compliance markings that appear on PACSystems RXi industrial computer products and the corresponding standards to which the products have been certified.

Agency Approvals

Description	*Agency Standard or Marking*	*Comments*
N.A. Safety for Information Technology Equipment	c UL us LISTED	Certification by Underwriter's Laboratories to UL 60950-1and CSA 60950-1
Low Voltage Directive European Safety for Industrial Control Equipment	CE	Self-Declaration in accordance with European Directives; Refer to Declaration of Conformity found at http://www.ge-ip.com/ for a complete list of approved products
Electromagnetic Compatibility Directive European EMC for Industrial Control Equipment	CE	Self-Declaration in accordance with European Directives; Refer to Declaration of Conformity found at http://www.ge-ip.com/ for a complete list of approved products

Note: The agency approvals listed above and on the Declaration of Conformities are believed to be accurate; however, a product's agency approvals should be verified by the marking on the unit itself.

Standards Overview

For environmental specifications, refer to chapter 1.

EMC Emissions and Immunity Specifications

EMC EMISSIONS		
Emissions	**CISPR 11/EN 55011/ EN55016-2-3**	30 – 1000 MHz, radiated, Group 1, Class A,
	FCC 47CFR15	30 – 7500 MHz, radiated, Class A
	CISPR 22/EN55022	30 – 6000 MHz, radiated, Class A, Ethernet port: 0.15 – 30 MHz, conducted, Class A
EMC IMMUNITY		
Electrostatic Discharge	**EN61000-4-2[2] /EN55024/CISPR 24/**	±8.0 kV air, ±4.0 kV contact,
RF Susceptibility	**EN 61000-4-3[2]**	1kHz sine wave, 80% AM 10 V/m, 80 – 1000 MHz 3 V/m, 1.0 – 2.0 GHz 1 V/m, 2.0 – 2.7 GHz
Fast Transient	**EN 61000-4-4[2]**	DC Input: ±2 kV, 33 nF direct Video and Ethernet ports, shielded: ±1.1 kV, capacitive clamp
		RS-232 port, unshielded: ±1.1 kV, capacitive clamp
Surge	**EN 61000-4-5[2]**	DC Input: 0.5 kV, 12 ohms (CM); 0.5 kV, 2 ohms (DM) Ethernet port, shielded: ±1.0 kV, 2 ohms (CM)
Conducted RF Immunity	**EN 61000-4-6[2]**	DC Input: 10 V, CDN Video and Ethernet ports, shielded: 10 V, current clamp
		RS-232 port, unshielded: 10 V, current clamp
Magnetic Field Immunity[1]	**EN61000-4-8**	50 and 60 Hz, 30 A/m
Damped Oscillatory Wave	**EN 61000-4-18[2]**	DC Input: ±2. 5kV, 1 MHz (CM/DM); Video and Ethernet ports, shielded: ±2.5 kV, 1 MHz (CM)
		RS-232 port, unshielded: ±2.5 kV, 1 MHz (CM)

1) Applies only to IPCs with magnetic hard drive (ICRXIBNxM00xA).

2) EN 61000-4-x series of tests are technically equivalent to the IEC 61000-4-x series.

Government Regulations

The FCC requires the following note to be published according to FCC guidelines:

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his or her own expense.

Note: Changes or modifications to this unit that are not expressly approved by GE Intelligent Platforms could void the user's authority to operate the equipment.

Industry Canada requires the following note to be published:

Note: This Class A digital apparatus complies with CAN ICES-3 (A)/NMB-3(A).

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